

Runway 33L Jet Arrival Historical Flight Tracks and Final Approach Course Intercepts at Baltimore/Washington International Thurgood Marshall Airport

Maryland Aviation Administration

December 5, 2017

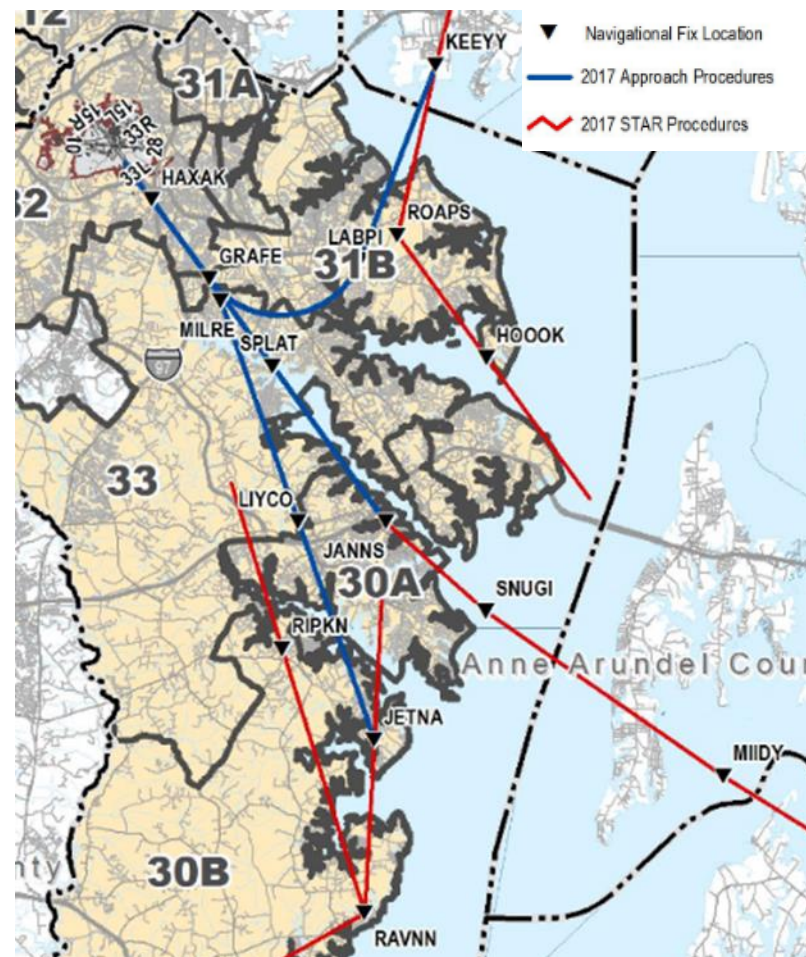


Presentation Purpose

- Examine historical aircraft flight track concentrations, operations levels, and percentages of where aircraft intercepted Runway 33L final approach course
- Answer questions posed by the Roundtable using best available MAA data regarding the historical percentages of Runway 33L arrival operations from:
 - The navigational fixes RAVNN to SPLAT
 - The navigational fixes RAVNN to GRAFE
- Operations and percentages along other predominant arrival flight paths for Runway 33L were also reviewed

Presentation Overview

- Materials in this presentation cover
 - Historical Jet aircraft flight track density for Runway 33L arrivals
 - Historical percentages and operations levels of Jet aircraft intercepting the Runway 33L final approach course
 - Data samples from 2012, 2013, 2015 and 2017



Data Sample Periods

Year	Start Date	End Date	Duration	Runway 33L Jet Arrival Operations	Notes:
2012	9 Feb. 2012	2 May 2012	84 days	15,849	Pre-Metroplex
2013	30 May 2013	21 Aug. 2013	84 days	16,978	Pre-Metroplex
2015	5 Feb. 2015	29 April 2015	84 days	15,224	Mid-Metroplex
2017	2 Feb. 2017	26 April 2017	84 days	16,143	Post-Metroplex

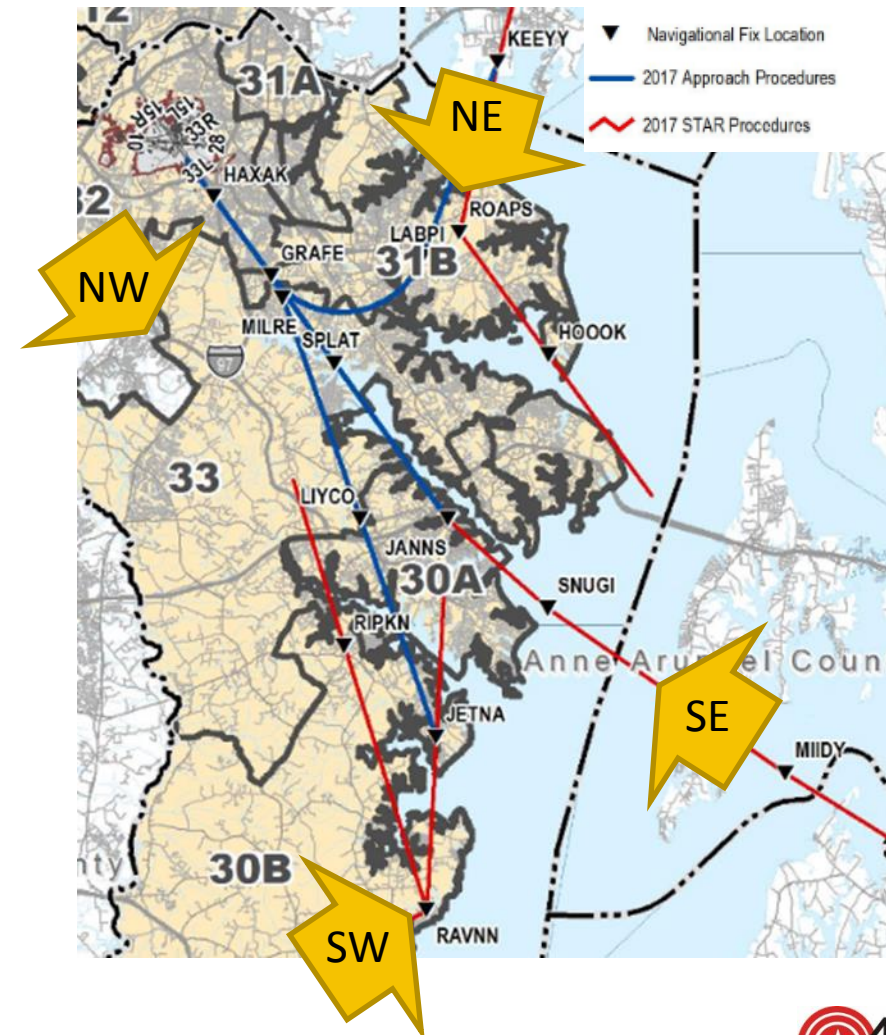
- 2012, 2015, and 2017 samples start on the Thursday corresponding to first FAA 28-day publication cycle for the respective February
- 2013 sample starts on the Thursday corresponding to first FAA 28-day publication cycle in 2013 where runway 10/28 was not closed

Flight Track Density – Figure Notes

- The base map includes the Maryland Legislative Districts (2012) identified in the DC Metroplex BWI Community Charter
- Published instrument approach procedures for each period are presented in black
- Flight track density (concentrations) for each period are presented as a color gradients from low track density (blue) to high (red)
- Flight track data for 2012 and 2013 are only available to 20 nmi
- Data for 2015 and 2017 are available to 30 nmi

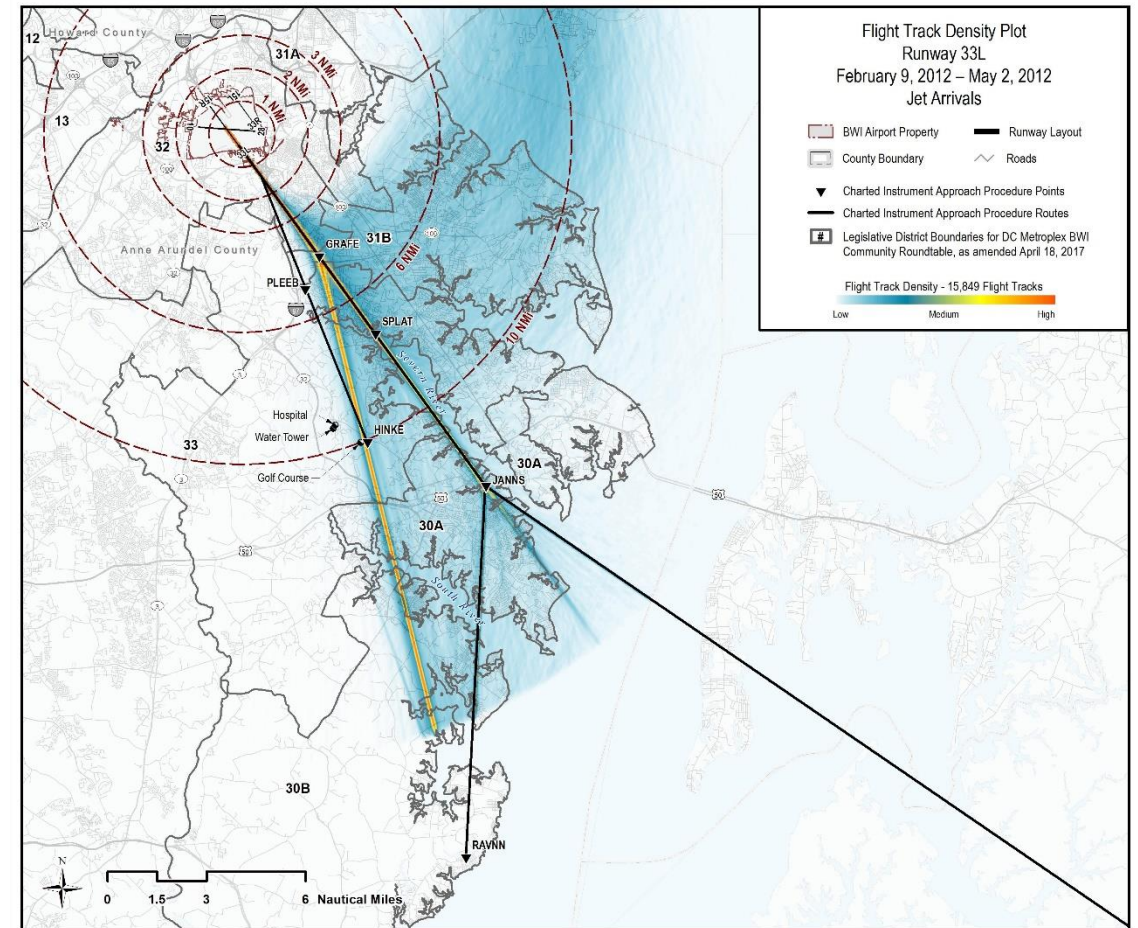
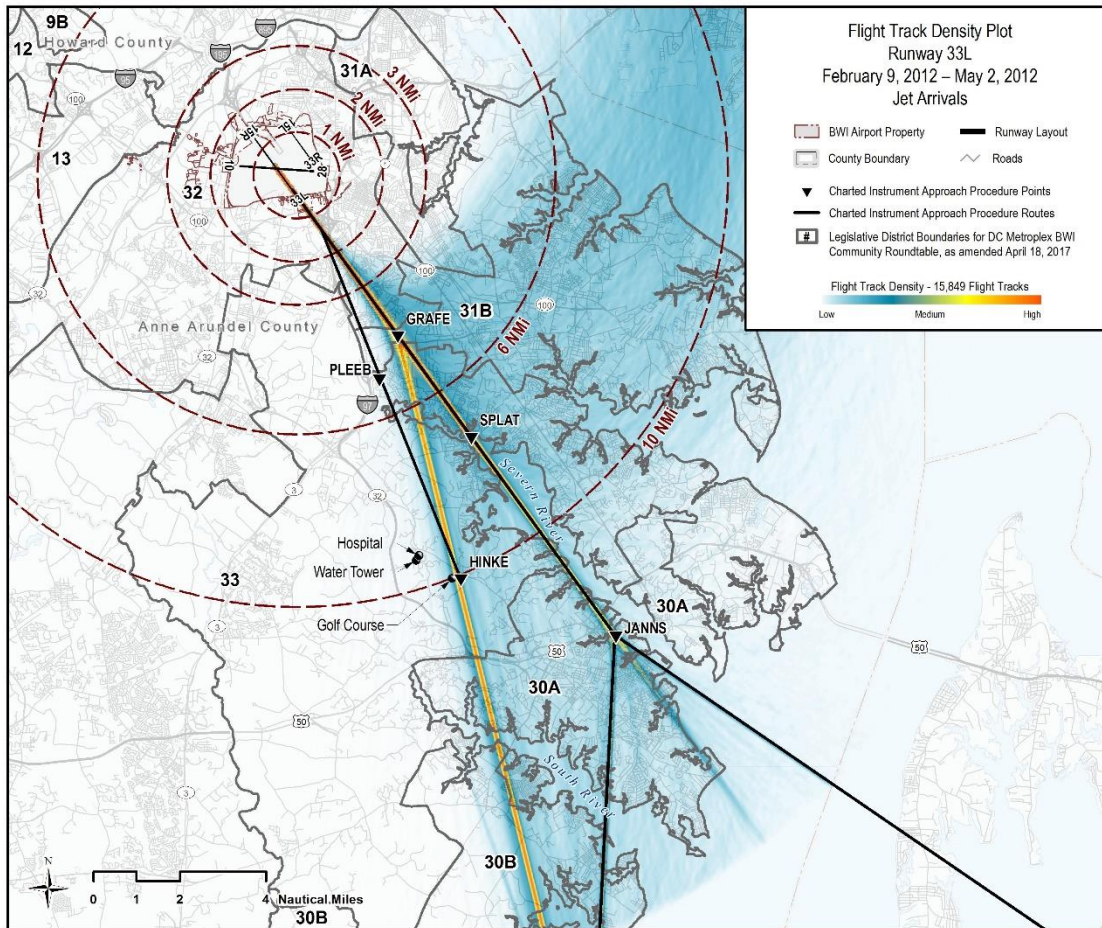
Operations Levels and Percentages

- Operations levels and percentages are split based on
 - Predominant intermediate cardinal direction where aircraft approached final approach course
 - Northeast – EMI, ANTHM, and TRISH STARS
 - Southeast – MIIDY STAR
 - Southwest – RAVNN and RIPKN STARS
 - Northwest - EMI, ANTHM, and TRISH STARS
 - Historical published instrument approach fix in vicinity of where aircraft intercepted 33L final approach course (JETNA, JANNS, SPLAT, GRAFE)
 - Operations identified as “OTHER” approached airport from seldom used direction or intercepted 33L final close to the airport (inside of GRAFE)

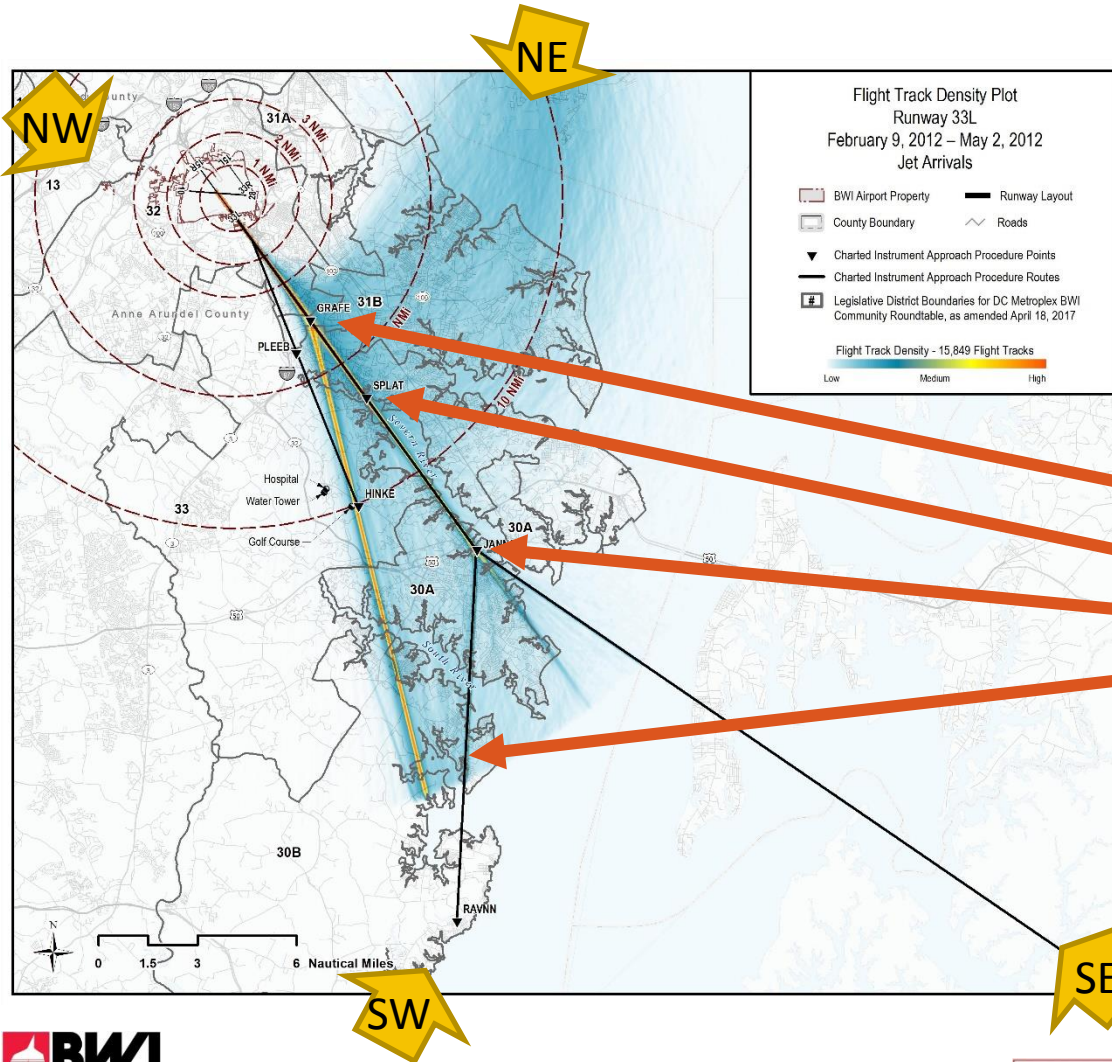


‘be better’

Runway 33L Jet Arrivals - 2012



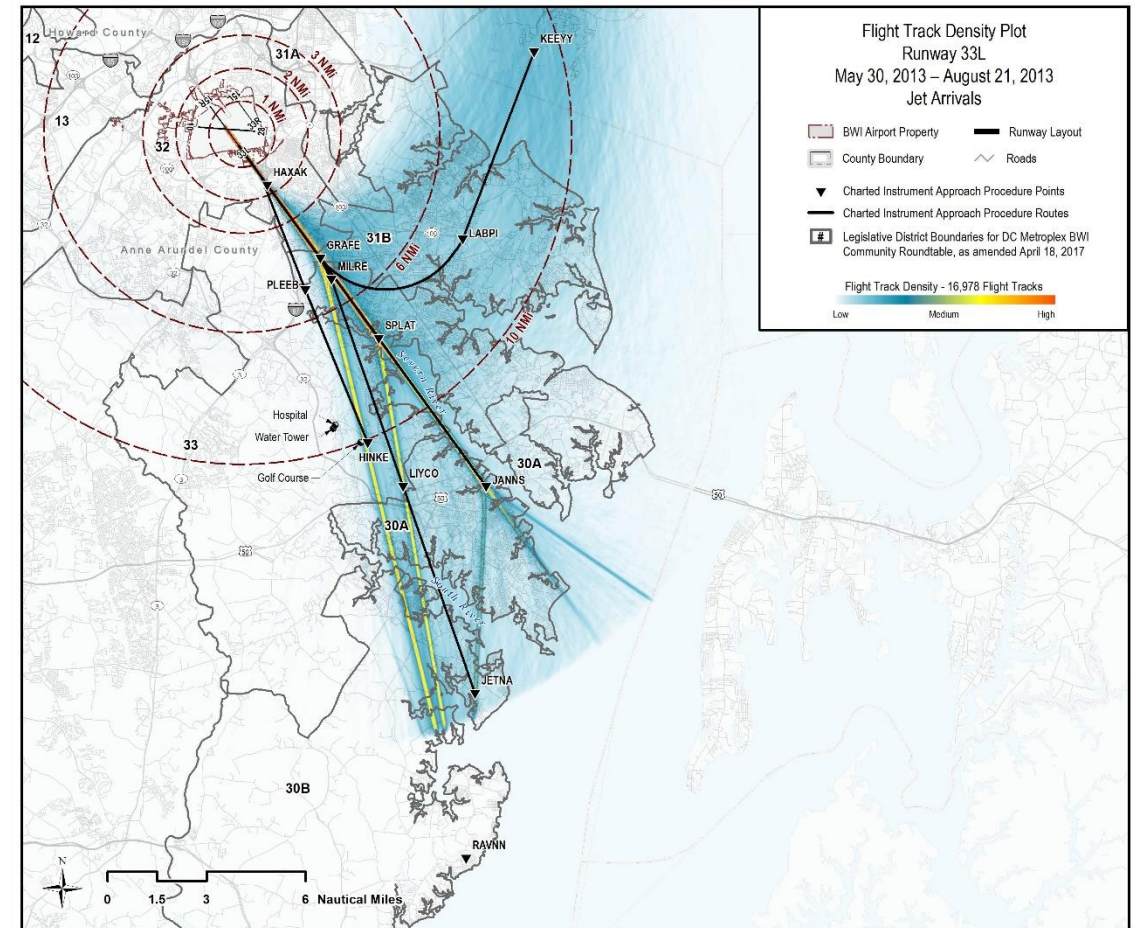
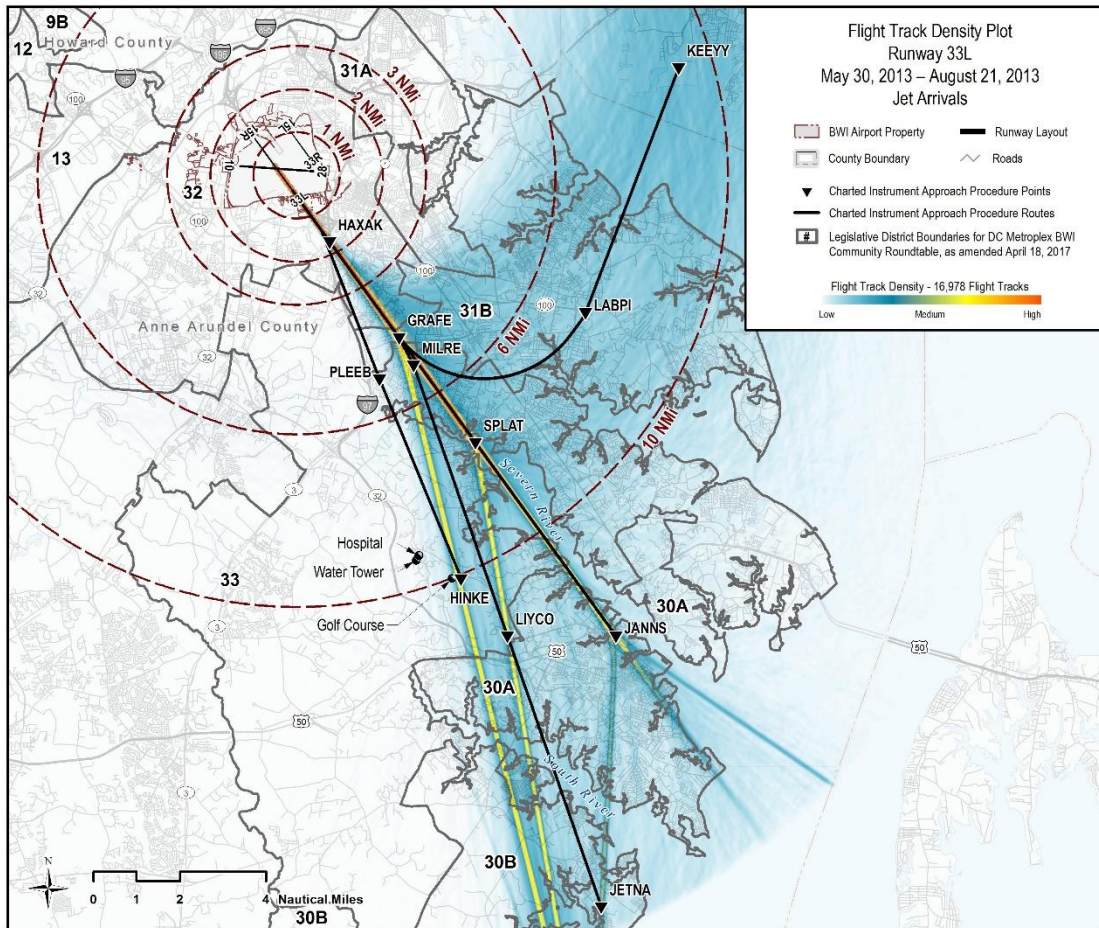
Runway 33L Jet Arrivals - 2012



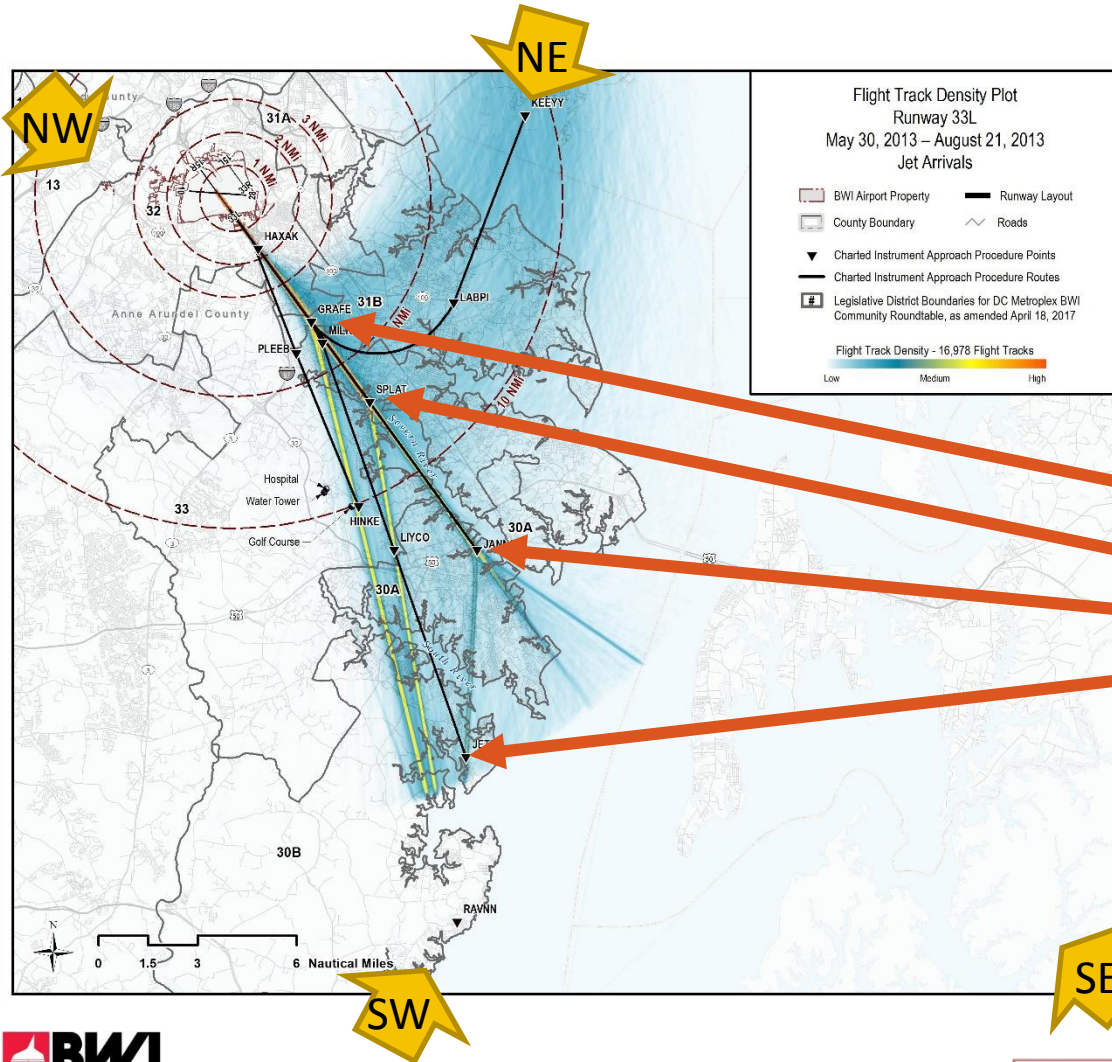
Instrument Approach Fix	Number of Operations					Percentage of Operations				
	NE	SE	SW	NW	TOTAL	NE	SE	SW	NW	TOTAL
OTHER	0	0	0	0	1,503	0.0%	0.0%	0.0%	0.0%	9.5%
GRAFE	3,094	45	3,777	92	7,008	49.5%	7.6%	51.3%	62.6%	44.2%
SPLAT	2,388	19	1,103	51	3,561	38.2%	3.2%	15.0%	34.7%	22.5%
JANNS	766	531	1,213	4	2,514	12.3%	89.2%	16.5%	2.7%	15.9%
JETNA*	0	0	1,263	0	1,263	0.0%	0.0%	17.2%	0.0%	8.0%
TOTAL	6,248	595	7,356	147	15,849	100.0%	100.0%	100.0%	100.0%	100.0%

*Note: JETNA was not published in 2012. JETNA is provided for reference and comparison purposes only

Runway 33L Jet Arrivals - 2013

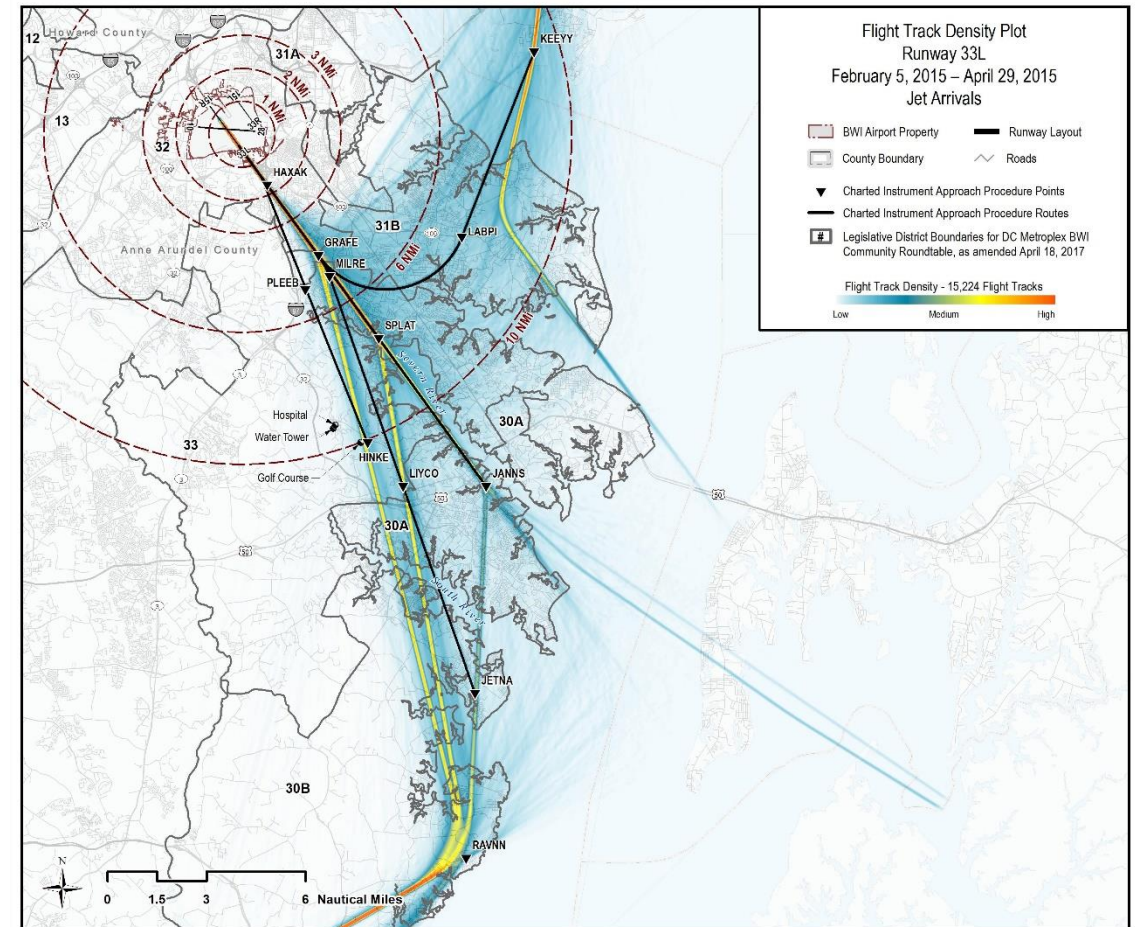
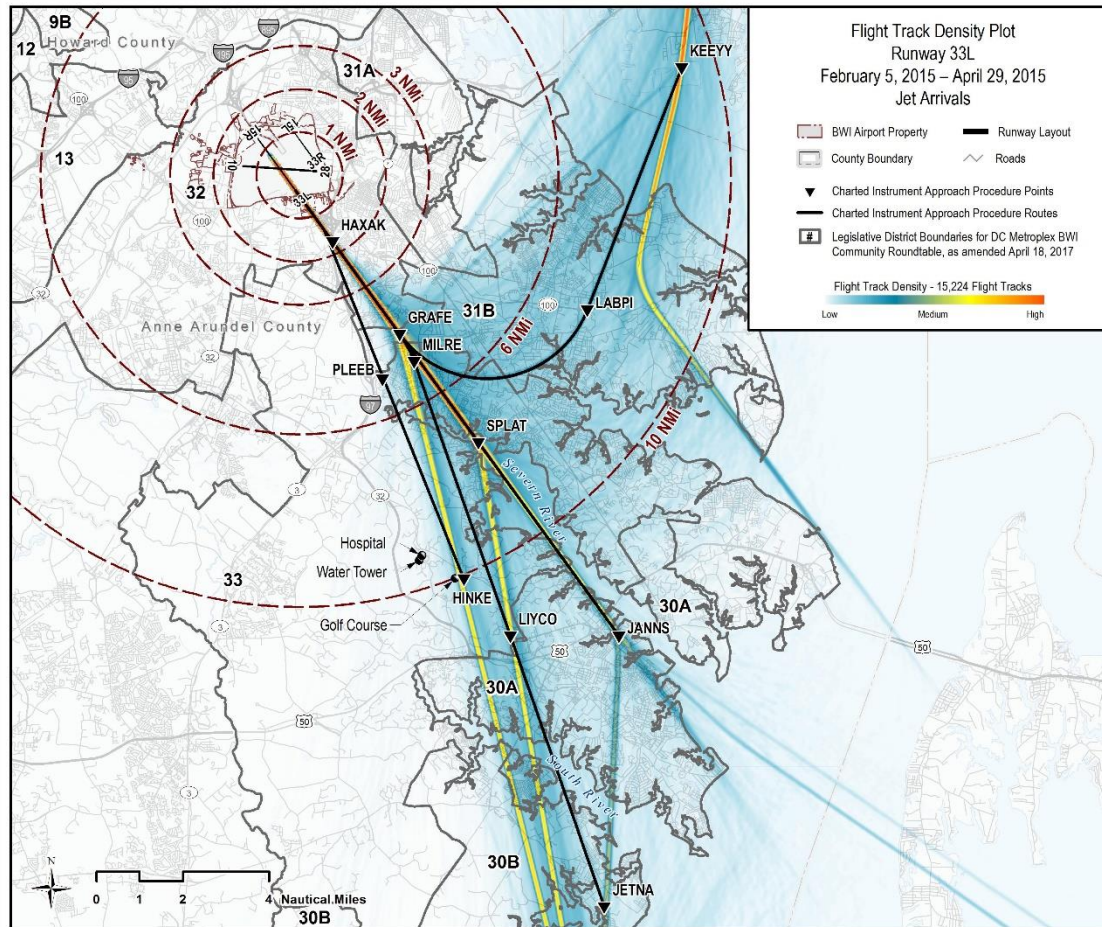


Runway 33L Jet Arrivals - 2013

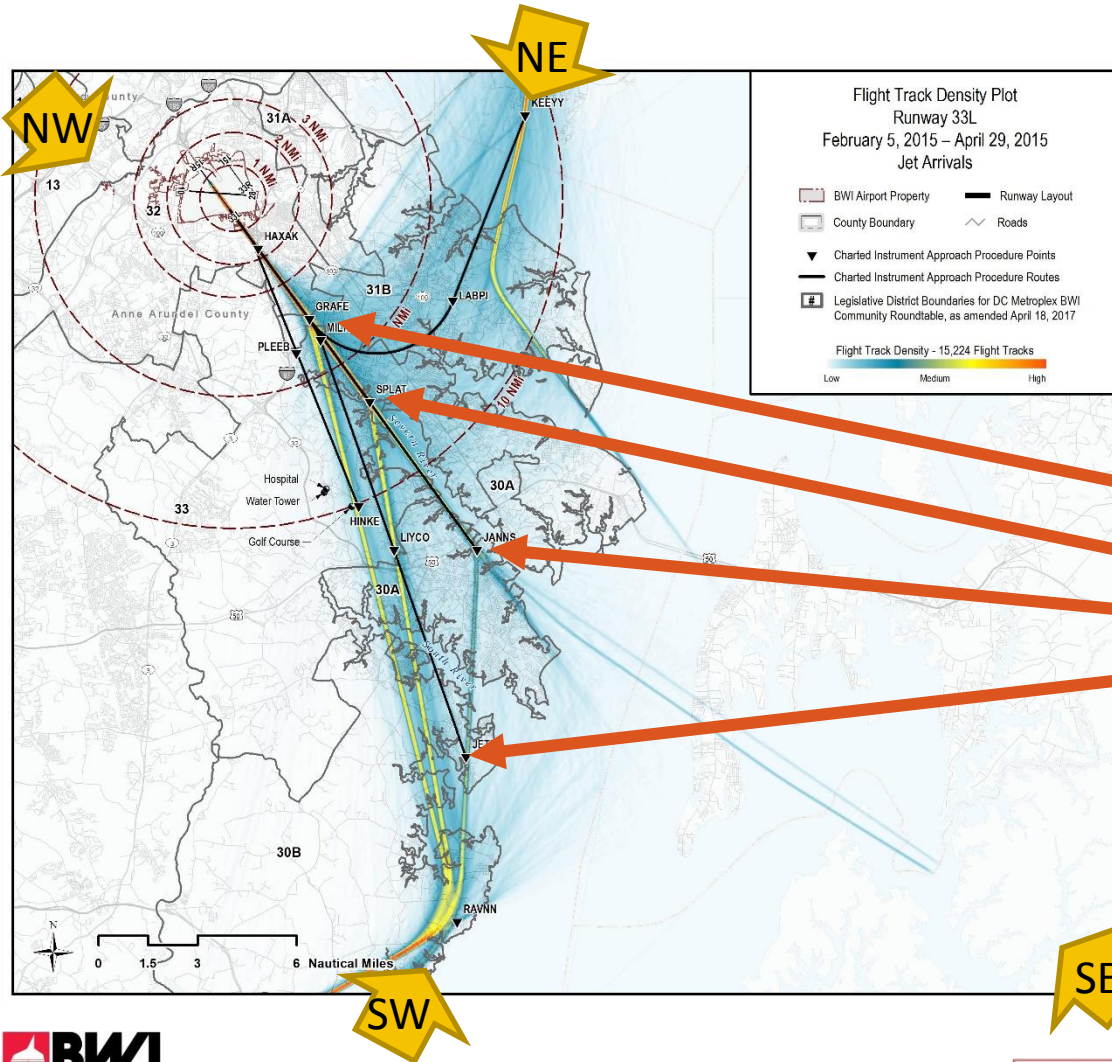


Instrument Approach Fix	Number of Operations					Percentage of Operations				
	NE	SE	SW	NW	TOTAL	NE	SE	SW	NW	TOTAL
OTHER	0	0	0	0	1,384	0.0%	0.0%	0.0%	0.0%	8.2%
GRAFE	3,402	34	2,541	197	6,174	49.9%	2.7%	35.0%	81.7%	36.4%
SPLAT	2,648	169	2,328	39	5,184	38.8%	13.3%	32.1%	16.2%	30.5%
JANN	774	1,069	941	5	2,789	11.3%	84.0%	13.0%	2.1%	16.4%
JETNA	0	0	1,447	0	1,447	0.0%	0.0%	19.9%	0.0%	8.5%
TOTAL	6,824	1,272	7,257	241	16,978	100.0%	100.0%	100.0%	100.0%	100.0%

Runway 33L Jet Arrivals - 2015

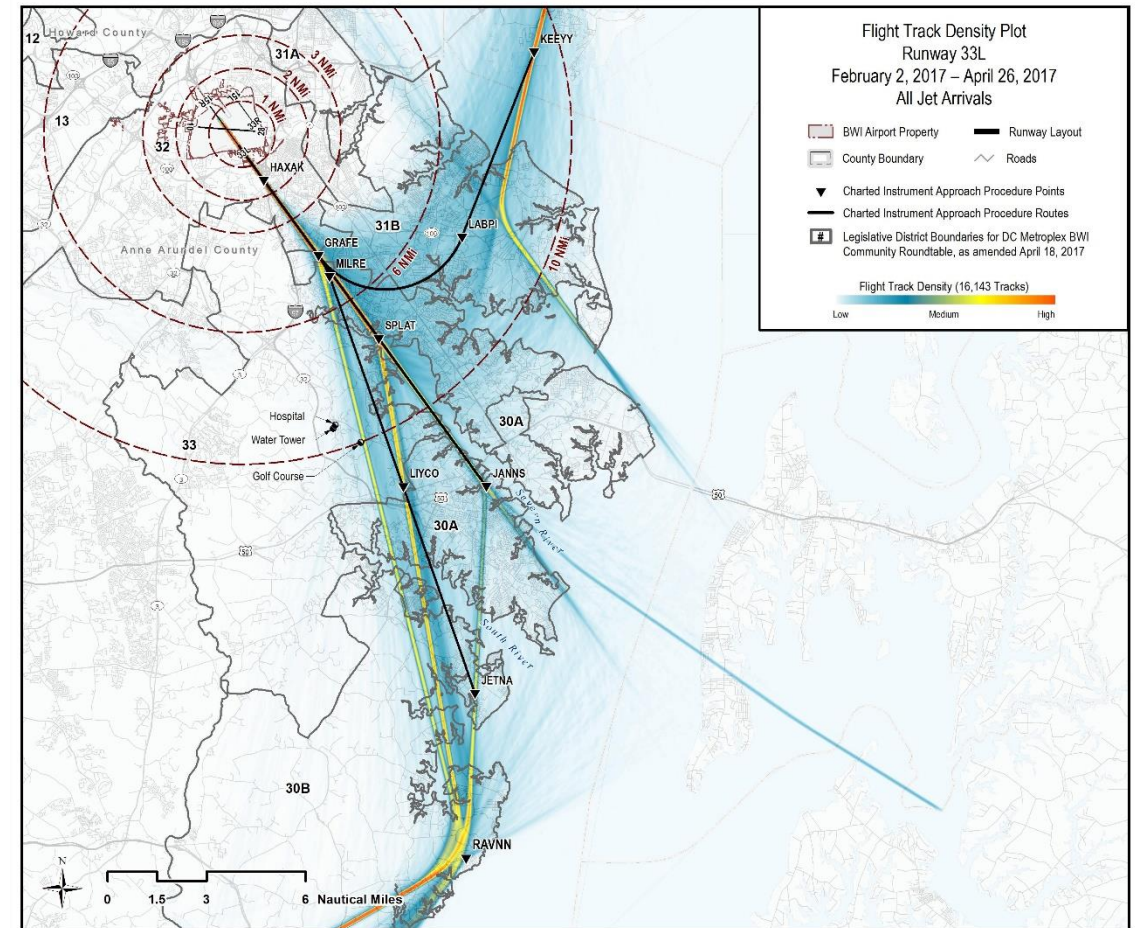
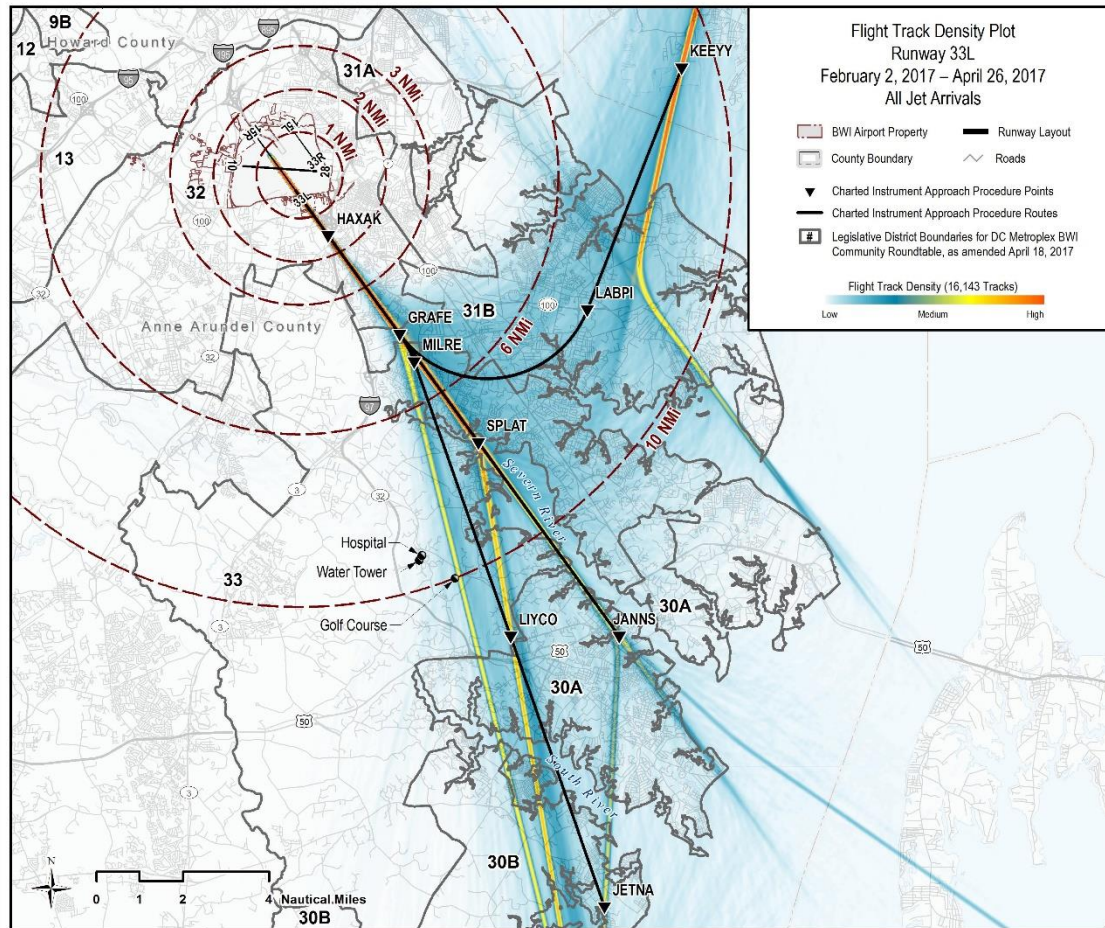


Runway 33L Jet Arrivals - 2015

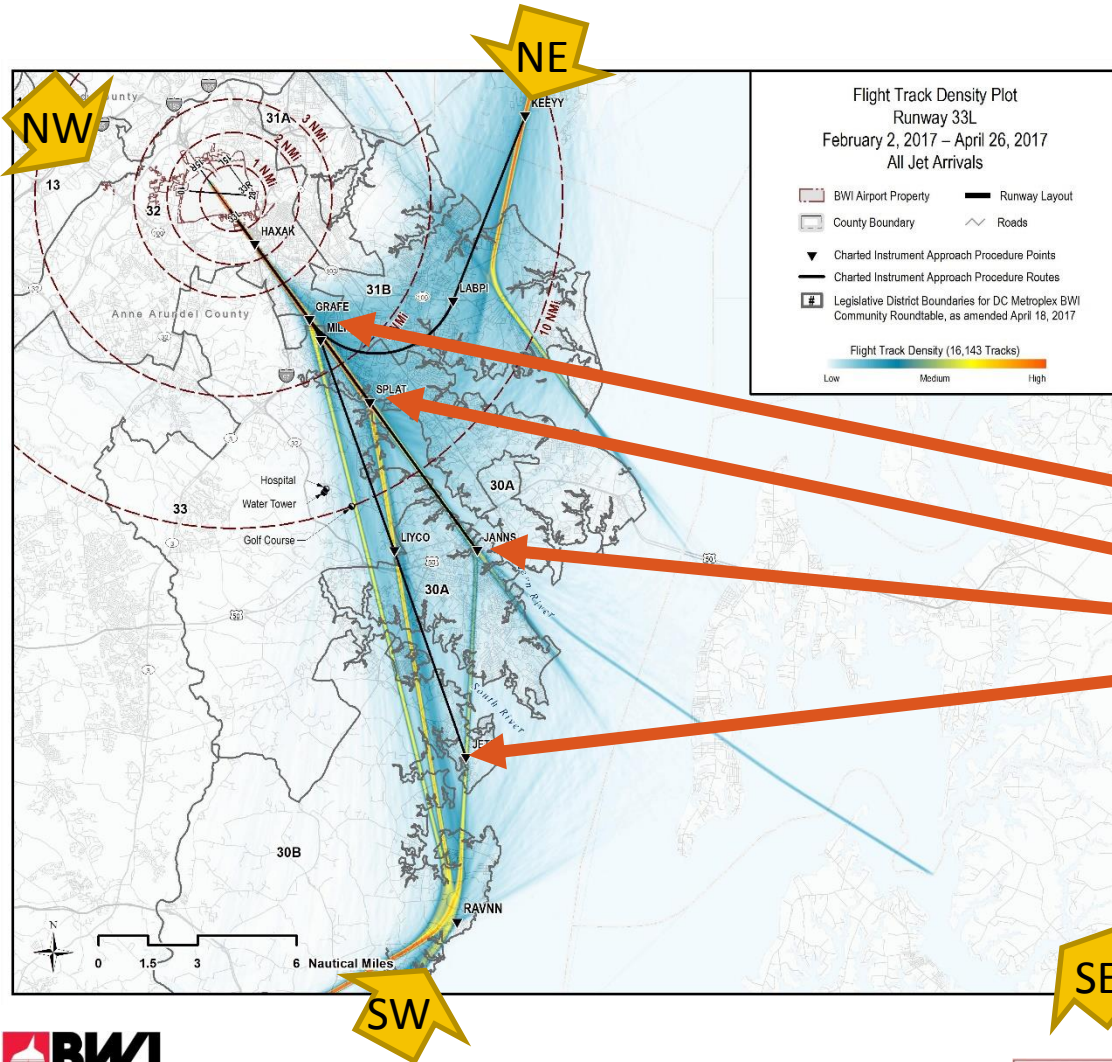


Instrument Approach Fix	Number of Operations					Percentage of Operations				
	NE	SE	SW	NW	TOTAL	NE	SE	SW	NW	TOTAL
OTHER	0	0	0	0	601	0.0%	0.0%	0.0%	0.0%	3.9%
GRAFE	3,597	38	2,821	160	6,616	54.6%	12.8%	37.4%	82.1%	43.5%
SPLAT	2,418	48	2,727	35	5,228	36.7%	16.2%	36.2%	17.9%	34.3%
JANNS	577	211	1,578	0	2,366	8.8%	71.0%	20.9%	0.0%	15.5%
JETNA	0	0	413	0	413	0.0%	0.0%	5.5%	0.0%	2.7%
TOTAL	6,592	297	7,539	195	15,224	100.0%	100.0%	100.0%	100.0%	100.0%

Runway 33L Jet Arrivals - 2017



Runway 33L Jet Arrivals - 2017



Instrument Approach Fix	Number of Operations					Percentage of Operations				
	NE	SE	SW	NW	TOTAL	NE	SE	SW	NW	TOTAL
OTHER	0	0	0	0	188	0.0%	0.0%	0.0%	0.0%	1.2%
GRAFE	4,016	25	2,059	189	6,289	54.2%	8.8%	25.8%	68.2%	39.0%
SPLAT	2,797	49	3,803	52	6,701	37.8%	17.3%	47.6%	18.8%	41.5%
JANN	595	210	1,133	36	1,974	8.0%	73.9%	14.2%	13.0%	12.2%
JETNA	0	0	991	0	991	0.0%	0.0%	12.4%	0.0%	6.1%
TOTAL	7,408	284	7,986	277	16,143	100.0%	100.0%	100.0%	100.0%	100.0%

All Runway 33L Jet Arrivals – 2017 compared to 2012, 2013 and 2015

Operations

Instrument Approach Fix	Number of Operations				2017 Operations compared to:		
	2012	2013	2015	2017	2012	2013	2015
OTHER	1,503	1,384	601	188	-1,315	-1,196	-413
GRAFE	7,008	6,174	6,616	6,289	-719	115	-327
SPLAT	3,561	5,184	5,228	6,701	3,140	1,517	1,473
JANNS	2,514	2,789	2,366	1,974	-540	-815	-392
JETNA*	1,263	1,447	413	991	-272	-456	578
TOTAL	15,849	16,978	15,224	16,143	294	-835	919

Percentages

Instrument Approach Fix	Percentage of Operations				2017 Percentages compared to:		
	2012	2013	2015	2017	2012	2013	2015
OTHER	9.5%	8.2%	3.9%	1.2%	-8.3%	-7.0%	-2.8%
GRAFE	44.2%	36.4%	43.5%	39.0%	-5.3%	2.6%	-4.5%
SPLAT	22.5%	30.5%	34.3%	41.5%	19.0%	11.0%	7.2%
JANNS	15.9%	16.4%	15.5%	12.2%	-3.6%	-4.2%	-3.3%
JETNA*	8.0%	8.5%	2.7%	6.1%	-1.8%	-2.4%	3.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	N/A	N/A	N/A

*Note: JETNA was not published in 2012. JETNA is provided for reference and comparison purposes only

SW (RAVNN/RIPKN) Runway 33L Jet Arrivals – 2017 compared to 2012, 2013 and 2015

Operations

Instrument Approach Fix	Number of Operations				2017 Operations compared to:		
	2012	2013	2015	2017	2012	2013	2015
GRAFE	3,777	2,541	2,821	2,059	-1,718	-482	-762
SPLAT	1,103	2,328	2,727	3,803	2,700	1,475	1,076
JANNS	1,213	941	1,578	1,133	-80	192	-445
JETNA*	1,263	1,447	413	991	-272	-456	578
TOTAL	7,356	7,257	7,539	7,986	630	729	447

Percentages

Instrument Approach Fix	Percentage of Operations				2017 Percentages compared to:		
	2012	2013	2015	2017	2012	2013	2015
GRAFE	51.3%	35.0%	37.4%	25.8%	-25.6%	-9.2%	-11.6%
SPLAT	15.0%	32.1%	36.2%	47.6%	32.6%	15.5%	11.4%
JANNS	16.5%	13.0%	20.9%	14.2%	-2.3%	1.2%	-6.7%
JETNA*	17.2%	19.9%	5.5%	12.4%	-4.8%	-7.5%	6.9%
TOTAL	100.0%	100.0%	100.0%	100.0%	N/A	N/A	N/A

*Note: JETNA was not published in 2012. JETNA is provided for reference and comparison purposes only

Overall Arrival Observations

- The number and percentage of all Runway 33L Jet arrivals intercepting final approach course post-Metroplex have:
 - Decreased intercepting final inside of GRAFE
 - -1,196 operations/-7.0% compared to 2013
 - Increased intercepting final near GRAFE
 - 115 operations/2.6% compared to 2013
 - Increased intercepting final near SPLAT
 - 1,517 operations/11.0% compared to 2013
 - Decreased intercepting final near JANNS
 - -815 operations/-4.2% compared to 2013
 - Decreased intercepting final near JETNA
 - -456 operations/-2.4% compared to 2013

SW (RAVNN/RIPKN) Arrival Observations

- The number and percentage of Runway 33L Jet arrivals from the southwest intercepting final approach course post-Metroplex have:
 - Decreased intercepting final near GRAFE
 - -482 operations/-9.2% compared to 2013
 - Increased intercepting final near SPLAT
 - 1,475 operations/15.5% compared to 2013
 - Increased intercepting final near JANNS
 - 192 operations/1% compared to 2013
 - Decreased intercepting final near JETNA
 - -456 operations/-7.5% compared to 2013

Discussion

References

References

- Digital Terminal Procedures Publication, Federal Aviation Administration,
 - Effective
 - 2012: 9 February 2012 (FAA Terminal Procedures Publication, Cycle 1202)
 - 2013: 7 February 2013 (1302)
 - 2015: 5 February 2015 (1502)
 - 2017: 2 February 2017 (1702)
 - Current version available at https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/
- 2012-2017 Noise and Operations Monitoring (NOMS) Flight Track Data, Maryland Aviation Administration Noise